

1.4: Discussion

Discussion

Write a minimum one-page (12 font, single spaced) discussion on the experiment conducted this week. Address **at least one question in each category** as fully as possible integrating the collected data, providing explanations for the observed trends, and evaluating whether your original assumptions about the experiment were validated by the results. **The assignment will be graded on completeness, clarity of the explanations and the meaningful integration of the collected and calculated data.** Correct grammar and appropriate format for the chemical formulae and chemical reactions is expected. **You may use the outline included at the end of this document on how to build your essay to address each category.**

1. (Representation) Describe the components needed to correctly express a measurement using your recorded masses and volumes.
2. (Analysis) Identify the number of significant figures in all your recorded measurements. Describe what process you used to decide how many numbers were appropriate.
3. (Existing knowledge, research, and views) Classify mass, volume and density as intensive or extensive properties. Provide justification for your selections.
4. (Design process) Warm water was used to make the sugar water solutions. Provide at least one argument for why warm water is preferred for making the solutions.
5. (Design process) A drop of food coloring was added to each solution. Provide an explanation for why this was necessary and suggest an alternative for the use of the food coloring.
6. (Manipulation) Describe how you calculated the density of the solutions. Use one of your calculations to demonstrate the process.
7. (Analysis) How many significant figures will your calculated density have? Explain how you arrived at your conclusion.
8. (Analysis) Consider the components of your solutions, then evaluate which of those components will contribute meaningfully to the density of the solution. Use your experiment and calculated values as supporting evidence.
9. (Analysis) Compare the density values calculated using the three separate measurements for each solution. Provide an explanation for the observed differences and/or similarities.
10. (Analysis) Compare your density values to the values obtained by your team members. Provide an explanation for the observed differences and/or similarities.
11. (Experiment design) When layering the solutions, a clean and dry pipette was required to manipulate extract each layer. Provide at least one justification for this requirement.
12. (Experiment design) The solutions were layered starting with the densest solution on the bottom. Provide a strong argument why this order was required.
13. (Assumptions and limitations) Consider what would happen if you layered the solutions in a different order. Provide a brief description of what you predicted or observed and use your knowledge of density to support your prediction/observation.
14. (Experiment design) Propose another experiment using chemicals from your home that will result in the creation of a density column. You may carry out the experiment and submit the picture for bonus points.

Recommended discussion outline:

The properties of matter that we studied in this experiment are ... and can be classified as ...

In this experiment, we represented

An alternate experiment that would result in a similar outcome would be

When calculating density, we use ... and we perform the following calculation

The density values for the solutions are

In this experiment we assumed

The purpose of the experiment was ... By performing this experiment, I learned ...

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